

### ABSTRACT OF THE INVENTION

[0062] An apparatus for processing a semi-conductor wafer or similar workpiece has one or more liquid outlets for applying a heated process liquid to the wafer within a process chamber. Ozone gas is provided into the chamber directly, or via the processed liquid. Sonic energy is introduced to the workpiece through a layer of liquid. In an alternative design, the wafers are immersed in heated process liquid, and an ozone atmosphere is provided above the liquid. The wafers are then lifted out of the liquid, or the liquid is alternatively drained off. The ozone gas/liquid interface passes down across the surfaces of the wafers.

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